

Fig. 1

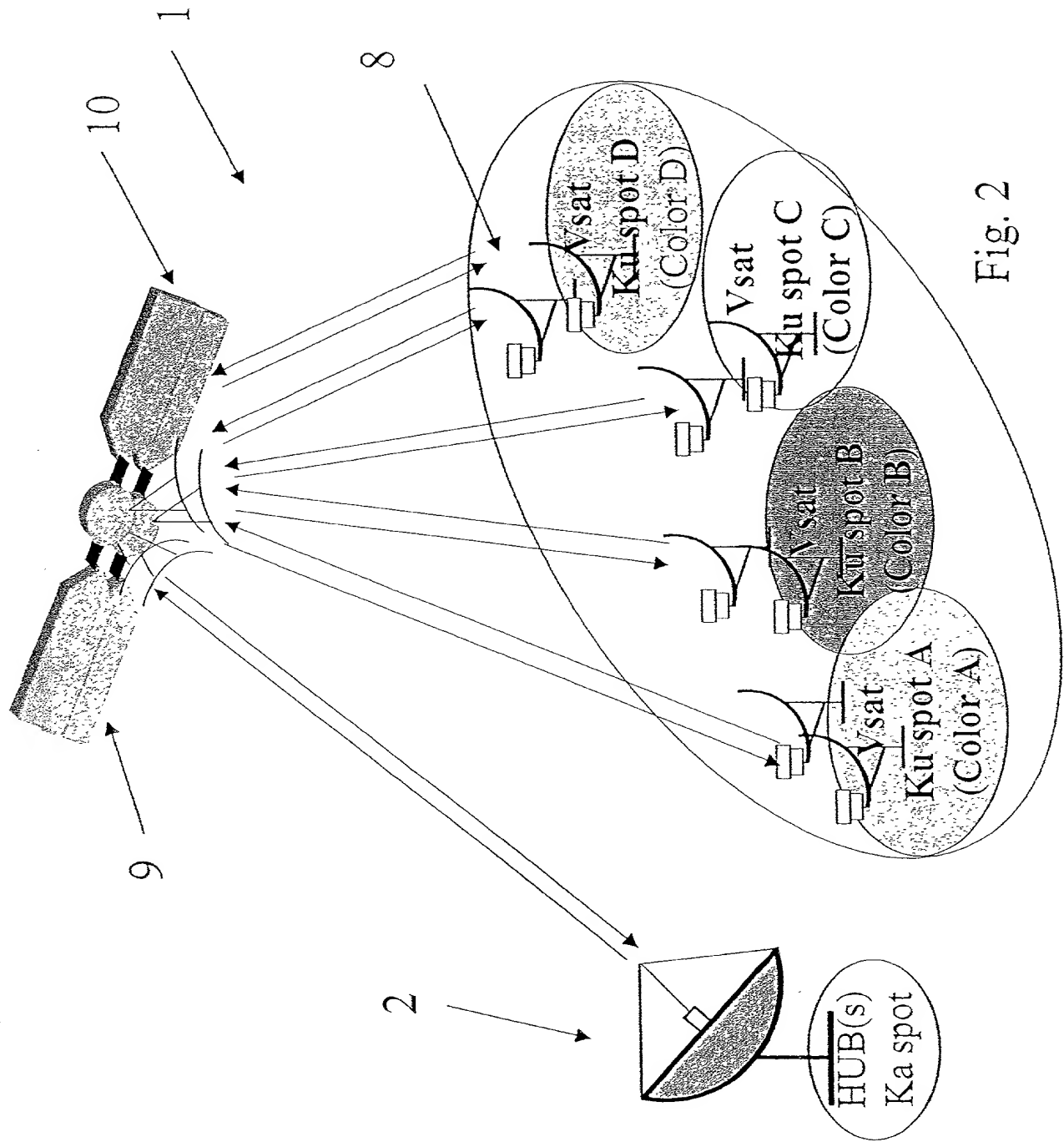


Fig. 2

FIG. 2

# Channel-Arrangement Example Table

Single set out of six. Channel numbers are in the frequency order. IB or OB channels

- Fig. 3A Full configuration – Dual-satellite, Dual-pole

A spot (color A)	a- channels	b- channels	B spot (color B)	a- channels	b- channels	C spot (color C)	a- channels	b- channels	D spot (color D)	a- channels	b- channels
X-pol	1	5	X-pol	2	6	X-pol	3	7	X-pol	4	8
Y-pol	3	7	Y-pol	4	8	Y-pol	1	5	Y-pol	2	6

- Fig. 3B Single satellite - Single-pole

A spot (color A)	a- channels	b- channels	B spot (color B)	a- channels	b- channels	C spot (color C)	a- channels	b- channels	D spot (color D)	a- channels	b- channels
X-pol	1	5	X-pol	2	6	X-pol	3	7	X-pol	4	8
Y-pol			Y-pol			Y-pol			Y-pol		

- Fig. 3C Single satellite - Dual-pole, “Half range” only is occupied

A spot (color A)	a- channels	b- channels	B spot (color B)	a- channels	b- channels	C spot (color C)	a- channels	b- channels	D spot (color D)	a- channels	b- channels
X-pol		5	X-pol		6	X-pol		7	X-pol		8
Y-pol		7	Y-pol		8	Y-pol		5	Y-pol		6

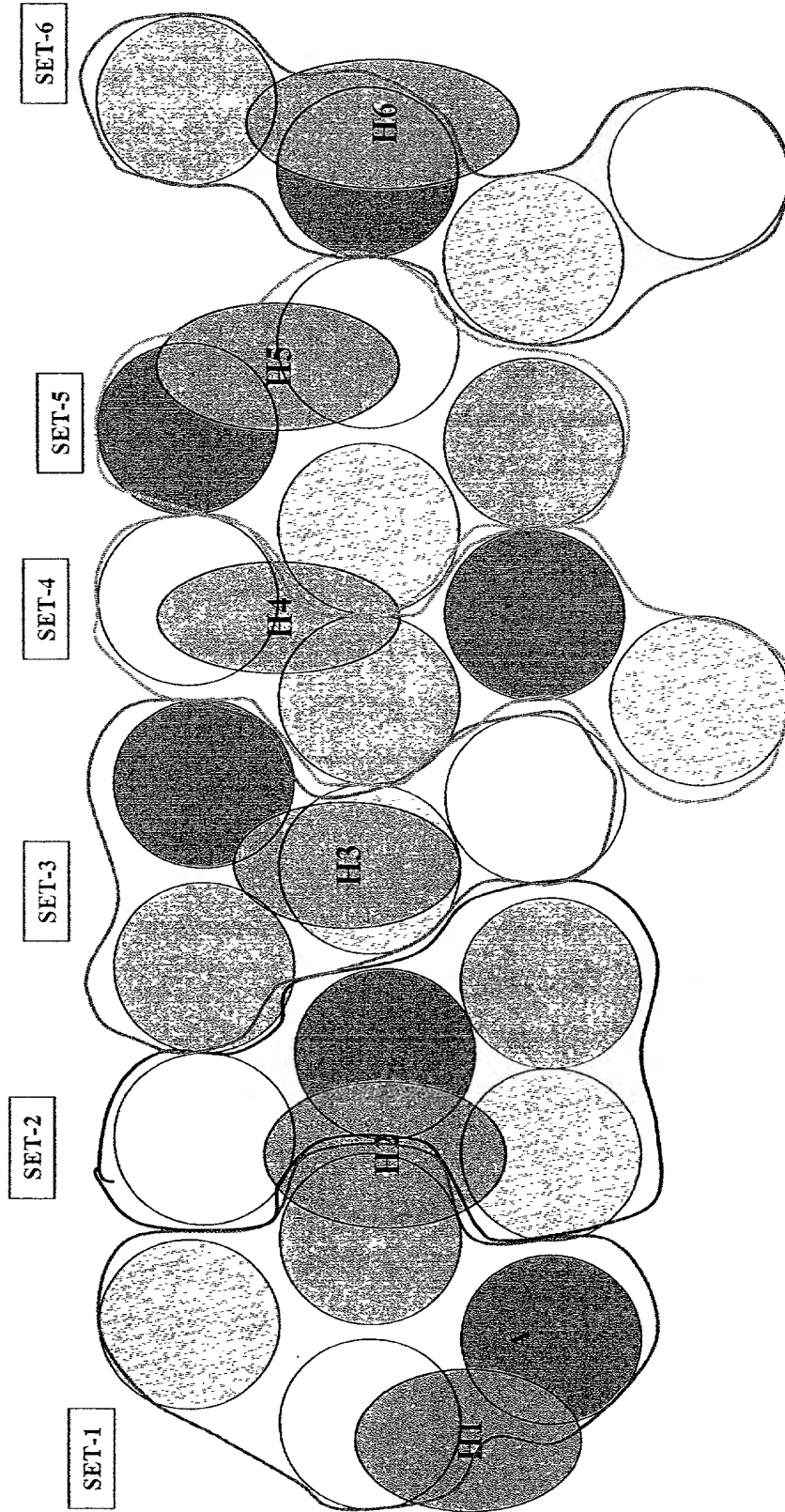


Fig. 4

FIG. 4



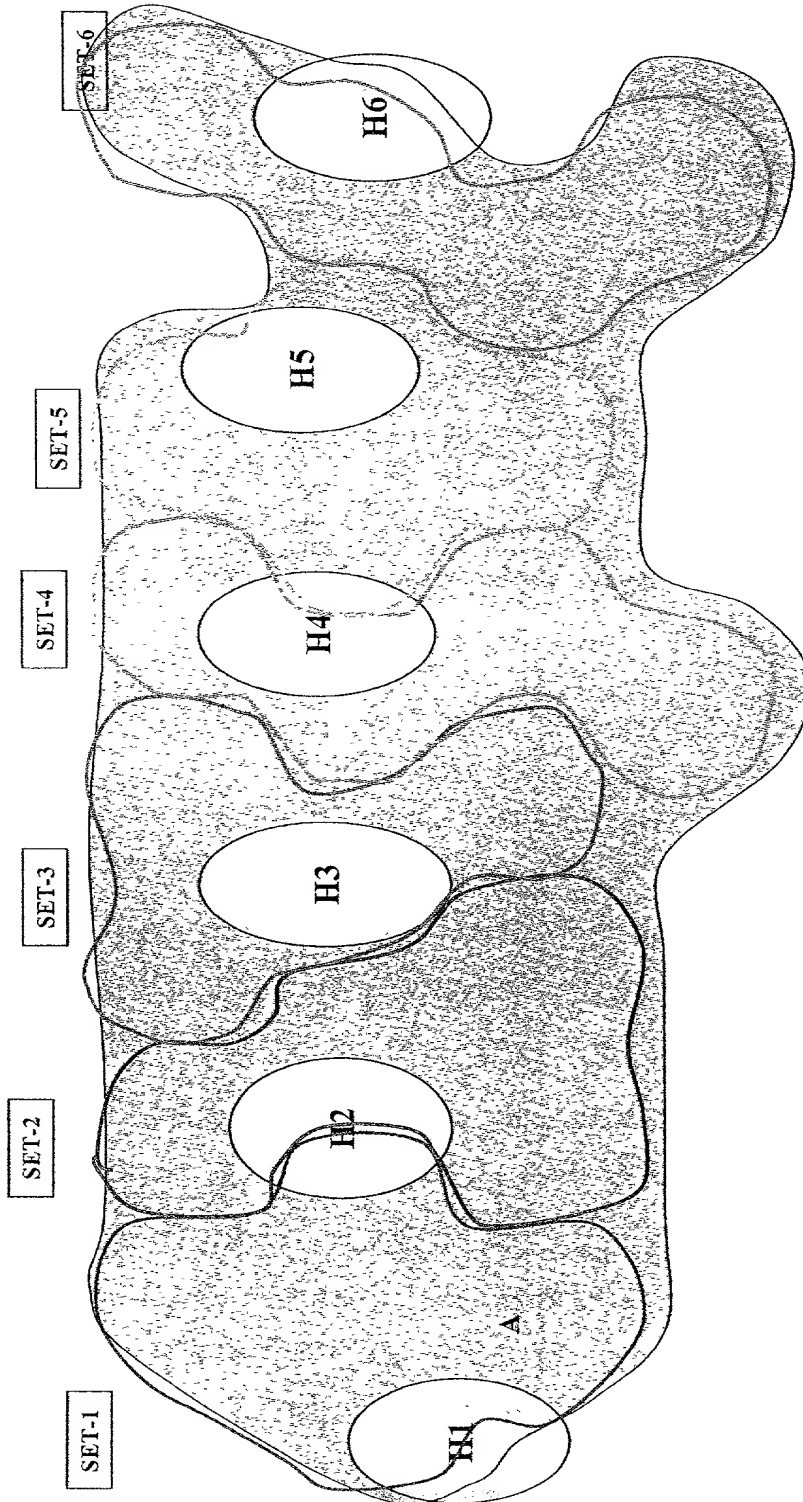


Fig. 6

Fig. 7

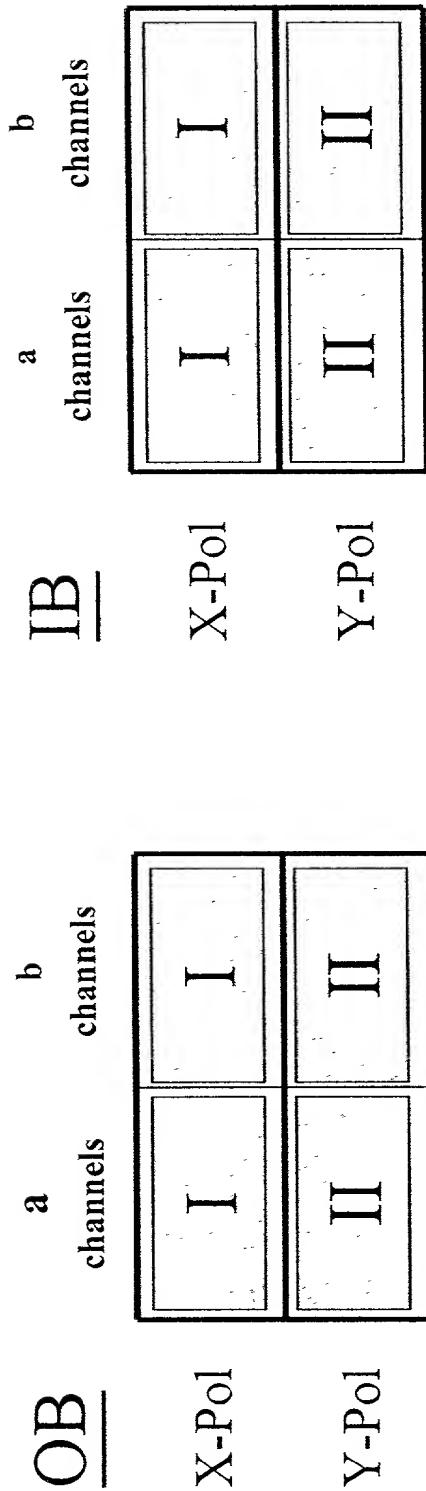


Fig. 7

Diagram illustrating a satellite communication system. A satellite in orbit is connected to four ground stations labeled 'Ku' (Ku-band) and one ground station labeled 'HUB(s) Ka' (Ka-band). The 'outbound' signal path is indicated by an arrow pointing from the 'HUB(s) Ka' station to the satellite.

The diagram illustrates the frequency allocation for X-pol and Y-pol polarizations. It shows the Ka band (26.5-40 GHz) and Ku band (12-18 GHz) with sub-bands 'a' and 'b'. The X-pol layout shows a continuous band from 26.5 to 40 GHz. The Y-pol layout shows a gap between the Ka and Ku bands. The Mcast band is shown at the top of each layout.

Band	Sub-band	Frequency Range (GHz)
Ka	a	26.5 - 28.5
	b	28.5 - 30.5
	a	30.5 - 32.5
	b	32.5 - 34.5
Ku	a	12 - 14
	b	14 - 16
	a	16 - 18
	b	18 - 20



FIG. 9

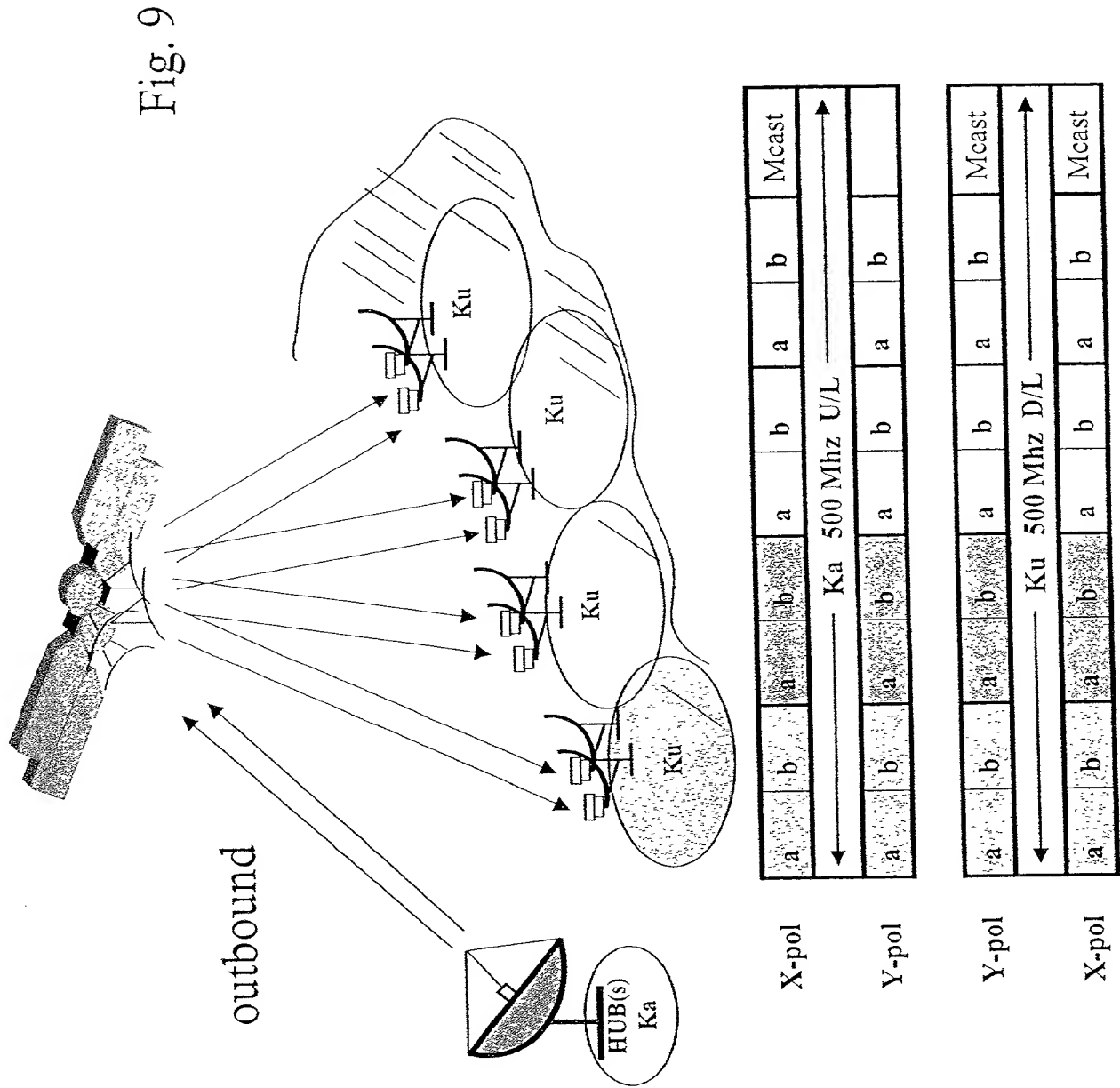
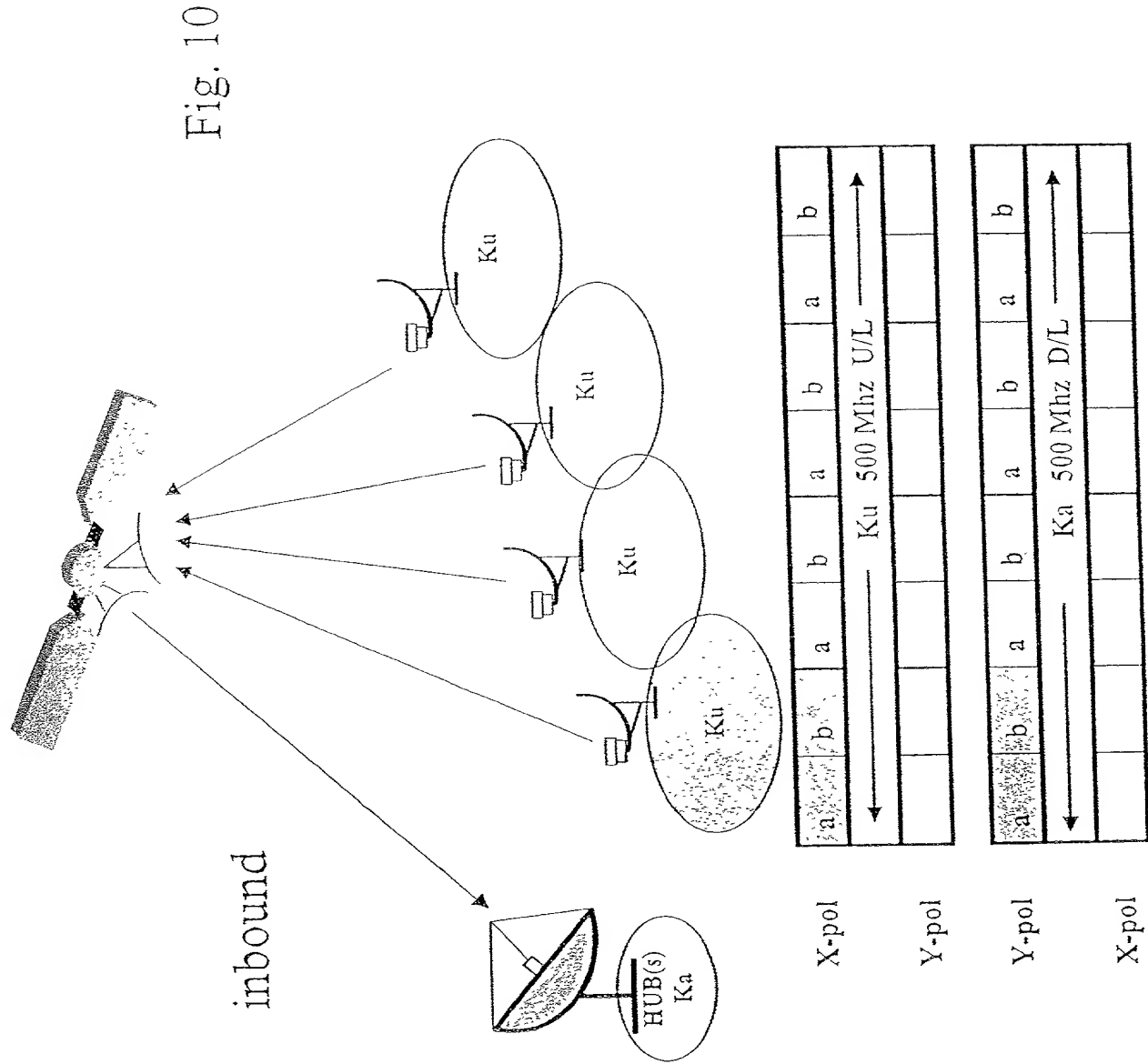


FIG. 10



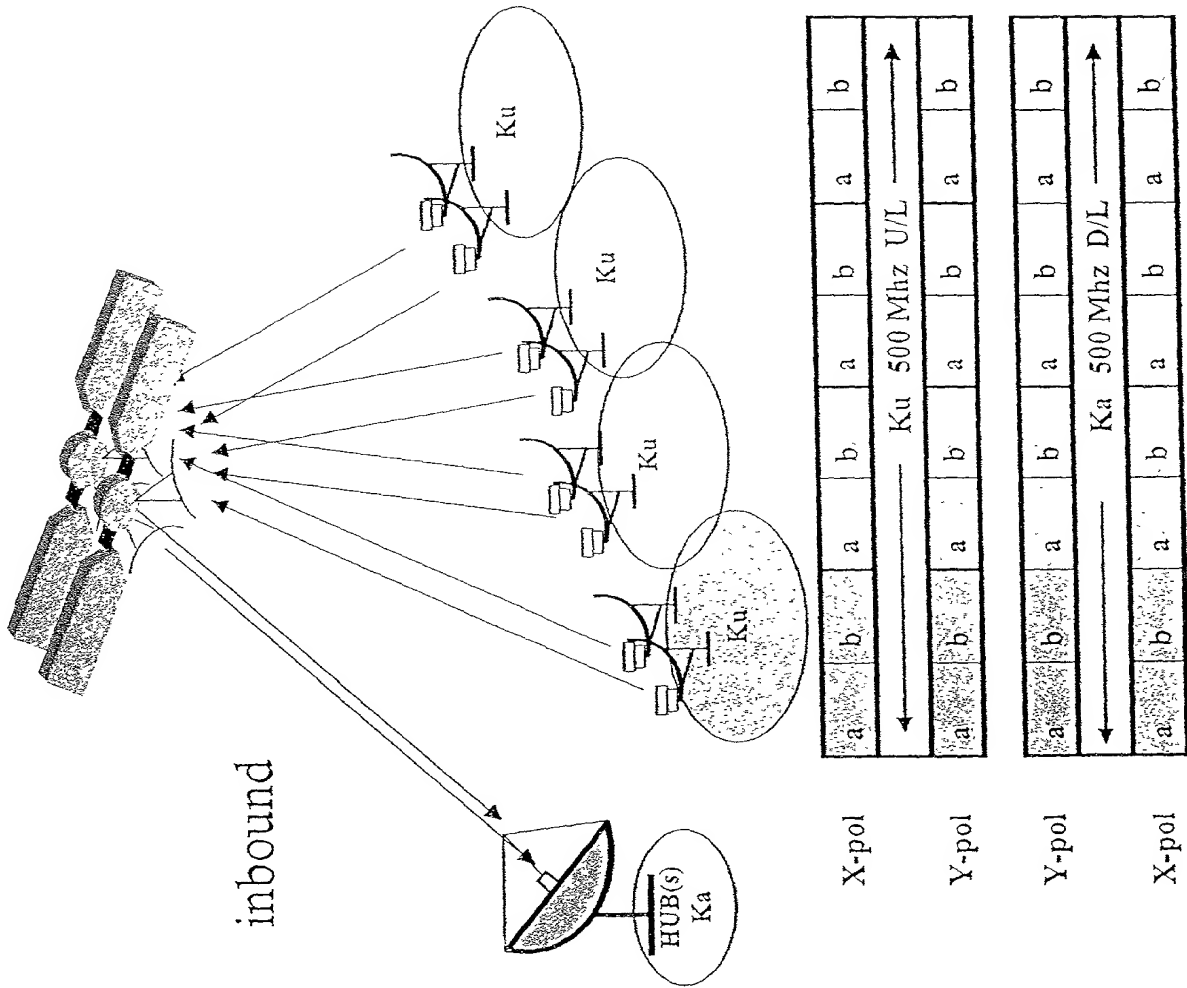


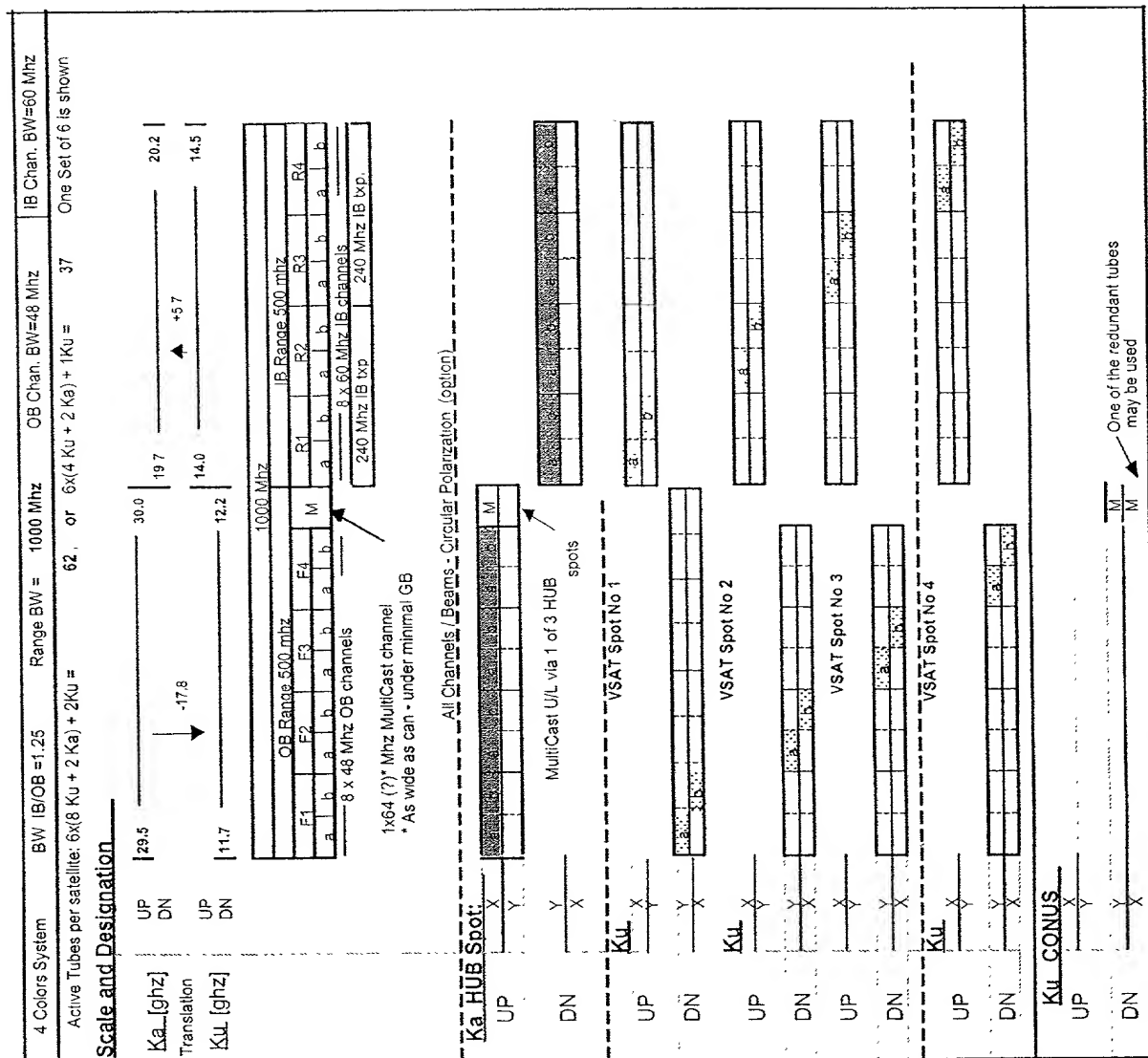
Fig. 11

FIG. 11

F1 to F4 are Outbound channel pairs  
 connected generally to Spot 1 - 4  
 respectively  
 R1 to R4 are Inbound channel pairs  
 connected generally to Spot 1 - 4  
 M is a Multicast channel on both  
 polarizations Connected (D/L) to Ku

Restoration Mode

Fig. 12



Global Satellite Networks		GE-15G/16G for Alternate, Frequency channels Concept				04-Aug-00 AA
4 Colors System	BW /B/O/B = 1.25	Range BW = 1000 Mhz	O/B Chan. BW=48 Mhz	I/B Chan. BW=60 Mhz		
Active Tubes per satellite: $8 \times (3 Ku + 2 Ka) + 2Ku =$		$62,$ or $6 \times (4 Ku + 2 Ka) + 1Ku =$	37	One Set of 6 is shown		

**Scale and Designation**

Ka [ghz] ———— Up ———— 23.5 ———— 30.0 ———— 19.7 ———— 20.2

Translation ———— DN ———— -17.8 ———— 14.0 ———— 14.5

Ku [ghz] ———— Up ———— 11.7 ———— 12.2

1000 Mhz											
OB Range 500 mhz						IB Range 500 mhz					
F1	F2	F3	F4	M	R1	R2	R3	R4			
a	b	a	b	a	b	a	b	a	b	a	b
8 x 48 Mhz OB channels						8 x 60 Mhz IB channels					
240 Mhz IB txp						240 Mhz IB rxp					

1x64 (7)\* Mhz MultiCast channel  
\* As wide as can - under minimal GB

All Channels / Beams • Circular Polarization (option)

Ka HUB Spot:		MultiCast U/L wa 1 of 3 HUB spots		VSAT Spot No 1		VSAT Spot No 2		VSAT Spot No 3		VSAT Spot No 4	
UP	X		Y	X	X	X	X	X	X	X	X
DN	X										
UP	X		Y	X	X	X	X	X	X	X	X
DN	X										
UP	X		Y	X	X	X	X	X	X	X	X
DN	X										
UP	X		Y	X	X	X	X	X	X	X	X
DN	X										
UP	X		Y	X	X	X	X	X	X	X	X
DN	X										

Ku CONUS		Sat II		Sat II		Sat II	
UP	X						
DN	X						

Fig. 13

FIG. 14

# Channel Donation Example

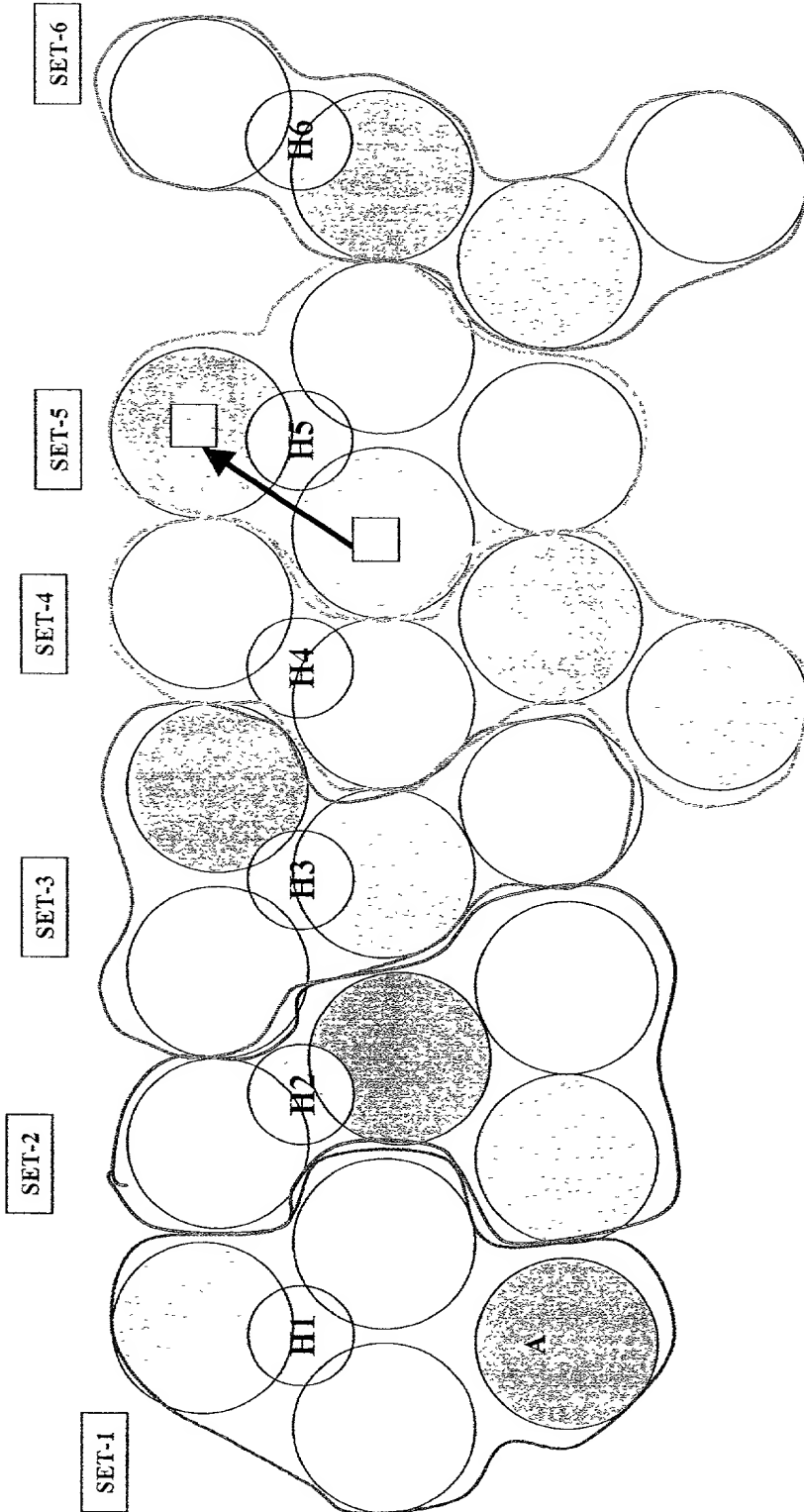


Fig. 14

# Improper Channel Donation Example

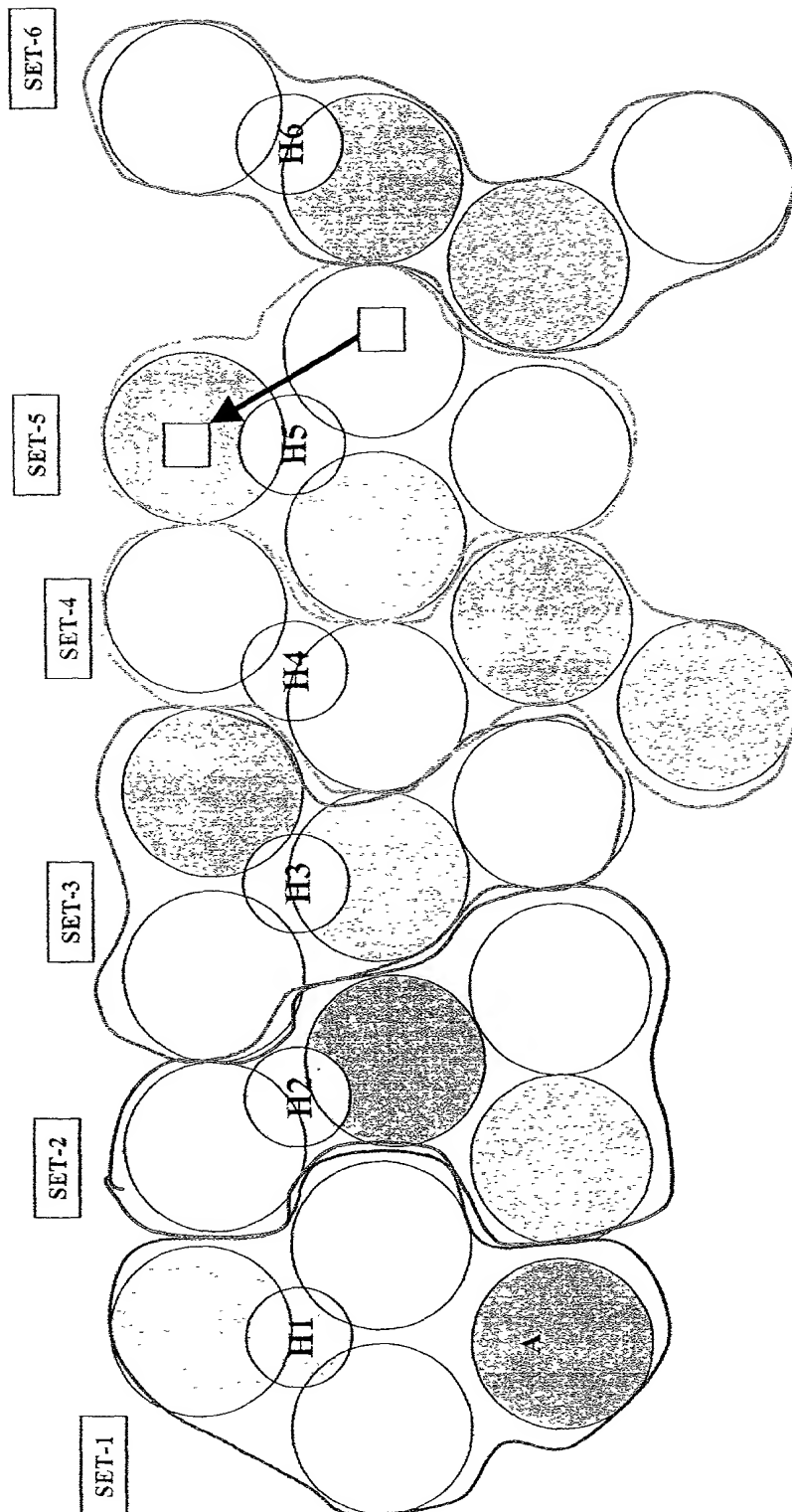


Fig. 15

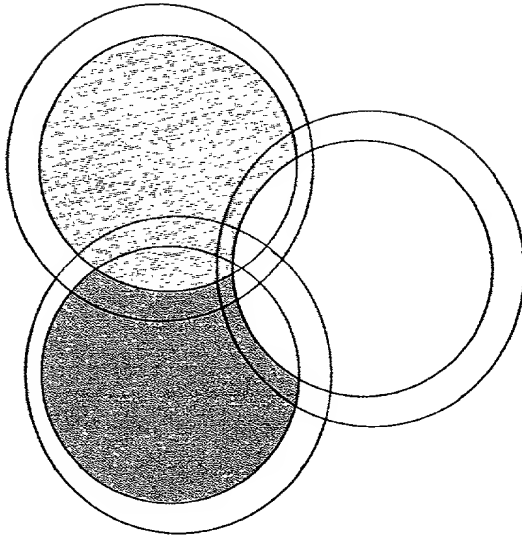


Fig. 16



Factor	Satellite	Generic (Ku)	MultiBeam (Ku + Ka)
Raw Freq. Range BW		500 Mhz	500 + 500 Mhz
Polarization. Freq. Reuse		X 2	X 2
Geographical Freq. Reuse		X 1	X 6
Useable Range BW		1,000 Mhz	12,000 Mhz

Fig. 17